

Extended Reality Boosts the Development of Tourism: the Relationship between Tourist Experience, Perceived Value and Behavior Intention in Red Tourism

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Abstract: The advent of extended reality (XR) in red tourism is revamping tourist experience. Compare to tour guide service in other-directed travel, the influence of XR technology in self-directed travel on perceived value and behavior intention needs further research. This paper constructs a conceptual model based on the relationship between tourist experience, perceived value and behavior intention. Basic data in the memorial hall in a memorial park dedicated to the Battle of the Xiangjiang River during the Long March were obtained through questionnaire survey. After collecting the data, this paper uses structural equation model to verify the hypotheses. As a result of this analysis, the present study offers the following conclusions: First, self-directed tourist experience has positive influence on knowledge value and experience value. Second, other-directed tourist experience has positive influence on knowledge value and sentimental value. Third, experience value, self-directed tourist experience and other-directed tourist experience has positive influence on behavior intention.

Keywords: behavior intention, perceived value, red tourism, tourist experience, XR

1. Introduction

In the outline of the 14th Five-Year Plan, extended reality and other technologies are listed as the critical industries of the digital economy. With the support of the macro environment, emerging digital technologies such as virtual reality, mixed reality and augmented reality have been enthusiastically supported and widely applied in many fields. At the end of 2018, Opinions on promoting high-quality development of digital culture industry formally put forward the development goal that the overall strength of China's virtual reality industry would rank among the top in the world by 2025. At the end of 2020, the Ministry of Culture and Tourism officially pointed out that it is necessary to actively guide and vigorously support the comprehensive application of XR technology in the field of culture and tourism, and create immersive content with digital technology. It can be seen that both central and local governments have constantly supported the XR technology by means of macro-control policies in recent years. In order to successfully transform China from a big tourism country

to a strong tourism country, technological innovation is a powerful mean of promotion. As a result, "online tourism", "smart tourism" and many other new fields appear in people's vision. In the era of "metaverse", the rapid development of various digital technologies has greatly added vitality to the development of tourism, and immersive virtual tourism has emerged with the tide of The Times.

Extended reality technology (referred to simply as XR technology) is the general term of a variety of virtual digital technologies (see Figure 1). XR technology refers to the integration of visual interaction technology of AR, VR and MR, based on key technology, using computer as the technical medium, coordinating the software and hardware [1]. An immersive virtual scene is built based on the numerous dynamic and vivid interaction between objective and subjective, individuals and environment, reality and illusion. Compared with AR, VR, MR and other single technologies, XR technology plays a more significant role in narrowing the distance between personal information and experience, and focuses on bridging the virtual world and the real world, so as to improve the user's sense of experience and immersion. As early as 1968, Sutherland first proposed a digital conceptual model focusing on three dimensions: visual viewing, auditory enhancement and olfactory simulation [2]. The concept of extended reality (XR) was not formally proposed until Qualcomm broke the boundary between AR, VR and MR and effectively fused them in 2017. As the XR technology matures, its application is more and more frequent at home and abroad and all walks of life want to catch the express train of technological innovation. When XR technology was first introduced in tourist industry, considering the high price of related equipment and the technical limitations of existing XR technical equipment, the popularity of XR technology in tourist attractions failed to meet expectations. Until 2019, the sudden outbreak of the COVID-19 limited a large number of tourists' ability to travel, and many scenic areas were closed from time to time due to the epidemic prevention and control. The epidemic has exerted heavy pressure on the entire tourist industry and the tourist economy has been hit hard. At this time, people have really realized the problem of tourism-vulnerability, and once again focused on XR technology. The XR technology superimposes a layer of virtual information in the three-dimensional space or the real physical world, extends and expands the visual system and auditory system, and brings new opportunities for the development of tourism. The growing maturity of XR technology also makes it possible for industrial application.

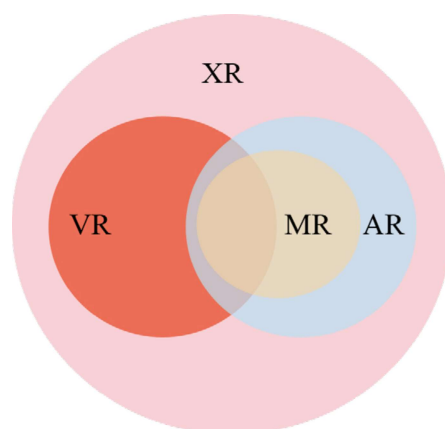


Figure 1 The relationship between AR, VR, MR and XR

As the leading spiritual product in China's tourist industry, red tourism has been highly valued. To create lasting stability for the Party and the country, the CPC Central Committee and The State Council have successively issued three phases of the outline and highlight the important position of red culture and red spirit in the process of building a socialist country with Chinese characteristics. In recent years, red tourism has become increasingly prosperous in the tourism market. In 2020, the number of red tourists in China reached more than 100 million, accounting for more than 11% of the domestic tourism market, maintaining a steady growth, and the economic contribution exceeded CNY 1 trillion. It's not easy for red tourism to achieve its present achievements, but to enter a new stage, the existing drawbacks need to be rectified. Most red tourism themes are about patriotism and revolutionary history education and most red tourist attractions in China have problems such as monotonous themes, rigid patterns and superficial tourist experiences. The traditional sightseeing mode has been unable to meet the tourist demand. In order to get out of the dilemma of the red tourism, local governments are also strongly supporting the red tourist attractions to make full use of emerging technologies and provide rich communication carriers for red culture [3]. The memorial hall in a memorial park dedicated to the Battle of the Xiangjiang River during the Long March introduced the XR panoramic exhibition hall, which greatly increased the quality of tourist experience. However, the difference between XR technology and traditional tour guide service has not been fully studied by scholars. The research studies the relationship between tourist experience, perceived value and behavior intention. By constructing the models of self-directed tourist experience, other-directed tourist experience, perceived value and behavior intention, this paper explores the relationships among the variables, trying to provide reference suggestions for the sustainable development of red tourism and improve the attraction of red tourist attractions.

2. Literature Review

2.1 The application of XR technology in tourist industry

Over half a century, foreign research on the application of XR technology in tourism has been at a relatively mature stage. Afsarmanesh believes that that it is an irresistible trend for the tourist industry to apply digital technology on a large scale in the future, and all tourism enterprises will actively use XR technology to maintain the competitiveness of the industry [4]. In the course of the study, Paquet found that someone who has travel demand can't travel due to objective conditions (such as physical disabilities, large-scale epidemics and other special circumstances), and virtual tourism through XR technology can solve these problems well [5]. From the perspective of cultural heritage and historical relics protection, XR technology can effectively alleviate the serious damage of cultural relics caused by tourists. As time goes by, XR is finding wider and wider application in tourist industry.

Different from the prosperous academic situation in foreign countries, the starting point of domestic research on XR technology lags far behind that in foreign countries, and the research span is short. There are many studies focusing on pure qualitative analysis, lacking of comprehensive combining and systematic quantitative analysis of existing articles, and the research system has not been formed, so it is in a relatively backward state. As early as 1994, the meaning of virtual reality,

the system structure of virtual reality and the composition of virtual environment were introduced [6]. XR is defined as an emerging digital means which integrates the Internet of Things, the Internet and MR technology, making it possible to experience the fusion of virtual and real in the future world, and expanding the boundary of human free at the same time. Virtual reality technology could become new economic growth point of tourism. Since XR technology has been introduced in tourism industry for a short time, most of the studies simply focuses on the technology, and few studies are based on specific case sites and study over a long period of time. Until the blowout year of the industry, the application research of XR technology in tourism began to carry out long-term sustainable research. Su Huiwei developed a scenic spot information system with AR as the technical foothold [7]. This system brings new experience to tourists, and effectively breaks through the existing technical bottleneck of AR technology. Someone proposed that XR technology can lay a foundation for reaching the utopia. However, some scholars worried about the ethical safety of XR technology and ethical issues caused by technological development. In recent years, there have been many studies on the application of XR technology in tourism and specific scenic areas, especially in the context of the normalization of COVID-19 epidemic. The development of XR technology has brought new vigor and vitality to the traditional tourism industry, and the new technology has also made tourists get different tourism experience, thus improving the popularity and brand effect of the tourist destination.

2.2 Red Tourism

The memorial sites and landmarks formed by the Communist Party of China (CPC) in the era of revolution and war (1921-1949) have extremely high educational value. Red tourism takes these historical memorial sites as its carrier, takes the revolutionary historical facts and unique red spirit as its connotation and organizes tourists to mourn and recall the tragic history of the past and have an in-depth understanding of the red culture tourism theme [8]. In the process of red tourism, tourists will gradually feel the charm of the red culture and the spirit behind it. In the cognitive process, tourists will automatically deal with the concrete objects of the red culture they see and even think deeply. In recent years, in the process of studying red tourism, researchers begins to pay attention to the influence of tourist experience on cultural transmission and behavior intention, but a mature research system and framework have not been formed. Since the red culture and the red spirit behind it are often displayed through cultural heritage and specific historical events, tourists need professional tour guide service, but there is shortage of talents in the existing red tourist attractions. Red tourist attractions usually provide explanation service only for large tourist groups, and in order to ensure the accuracy of explanation, tour guides from travel agencies are not allowed to introduce in the museum, so the needs of individual tourists can't be satisfied. When the contents of red culture displayed are obscure or unimaginably distant from the time of the tourist, it is difficult to explain by pictures, words and language. The traditional red tourism display method can't fully realize its purpose of communication, which greatly limits the educational function of red culture, so it is necessary to make up for it by technical means. However, when using digital technology like XR, project production is often affected by many problems. Most red tourist attractions are non-profit scenic spots with limited budget funds. So low-budget red tourist attractions can only use XR equipment with low resolution and rough design, which makes it difficult for tourists to have a clear understanding of the red culture.

2.3 Tourist Experience and Perceived Value

With the advent of the experience economy, tourist experience has become an important topic and academic research hotspot in tourism industry. At abroad, the researches focus on the essential type, motivation quality and so on of tourist experience. At home, tourist experience is referred as the interaction between tourists' inner activities and tourist objects in the process of specific tourist activities (such as sightseeing, communication and consumption). Tourist experience not only includes the experience of basic facilities and service such as transportation hotels, but also the experience of the core attractions of tourist attractions. There are two subjects (subject and object) in the process of tourism experience and two affect factors (the object's own factor and the main scenic spot factor). In recent years, more and more scholars have proposed that embodiment is the main attribute of tourist experience. In the field of tourism research, there has always been the problem of over-emphasizing visual experience, thus ignoring other physical feelings. Embodied experience is based on the result of the interaction of multiple senses, and the five senses are interlinked and inseparable. The progress of digital technology brings visitors different experience, mobilizing the multiple senses of the tourist body. Although domestic researches on tourist experience have yielded abundant results in recent years, most of the existing researches adopt qualitative analysis methods and focus on rural tourism and wetland tourism. Seldom researches are conducted on tourist experience of red historical and cultural heritage tourism destinations, and no unified opinions have been reached on classification standards. According to the characteristics of case and the existing research on tourist experience, the author divides tourist experience into self-directed tourist experience and other-directed tourist experience.

Based on the customer value theory of marketing, tourist perceived value is an overall evaluation of products or services, and refers to tourists' evaluation and trade-off of individual benefits after experiencing a complete tourism activity. Murphy believes that perceived value is the process of perceiving whether quality and corresponding price are balanced [9]. In the process of travelling, the core elements (such as tourism resources, cultural atmosphere and tourism products, etc.) and auxiliary elements (tourism facilities, food, accommodation, transportation, entertainment and tourism services, etc.) of the tourist destination will affect tourists' perception. Lee thinks that overall value, functional value and sentimental value are the three main dimensions of tourists' perceived value [10]. In the process of measuring perceived value model, perceived value could be divided into four dimensions: economic cost, non-monetary cost, social value and sentimental value, and be measured by structural equation model. In red tourism, perceived value could be divided into enlightening value, experience value and knowledge value. Based on the characteristics of red tourism and the existing classification dimensions of perceived value, this paper divides perceived value into sentimental value, knowledge value and experience value.

In the process of visiting red tourist attractions, the tourism resources make tourists have different perceptions, and finally have different tourist experience. Tourists can perceive values in three dimensions: knowledge value, sentimental value and experience. It is proved that the tourist experience positively affects the perceived value. Based on the relationship between tourist experience and perceived value, the author puts forward the following hypotheses according to the influence of different experience dimensions of red tourism on tourists' perceived value:

- H1a: Self-directed tourist experience has a positive effect on knowledge value;
- H1b: Self-directed tourist experience has a positive effect on sentimental value;
- H1c: Self-directed tourist experience has a positive effect on experience value;
- H1d: Other-directed tourist experience has a positive effect on knowledge value;
- H1e: Other-directed tourist experience has a positive effect on sentimental value;
- H1f: Other-directed tourist experience has a positive effect on experience value.

2.4 Perceived Value and Behavior Intention

Behavior intention is the tendency of people to take a certain behavior in the future and tourist behavior intention is the tendency of tourists to take tourism behavior in the future. Behavior intentions can be divided into positive and negative ones, which are generally composed of multiple dimensions. Positive behavior intention will generate favorable comments, strong desire to recommend and willingness to revisit. On the whole, scholars' attitude towards behavior intention is basically the same, which includes two dimensions: recommendation intention and revisit intention.

At present, there are two opposing views on tourist behavior intention: satisfaction theory and perceived value theory. Researchers who insist on satisfaction-oriented theory maintain that satisfaction is the most important direct cause of behavior intention, while those who insist on perceived value theory advocate perceived value are the most important direct antecedent of behavior intention. Cronin put all influence factors which may affect behavior intentions into a research model, tested the statistical correlation between different variables, and finally found that perceived value played the most significant role [11].

Based on the above research, this paper holds that perceived value is an important antecedent of behavior intention, and it can be further verified in red tourism. The complexity of experience determines that research should be conducted in a variety of dimensions. Therefore, multi-dimensional perceived value is more suitable to predict tourist behavior intentions than single-dimensional perceived value. The author puts forward the following hypotheses according to the influence of different dimensions of tourist perceived value on behavior intention:

- H2a: knowledge value has a positive effect on behavior intention;
- H2b: sentimental value has a positive effect on behavior intention;
- H2c: experience value has a positive effect on behavior intention.

2.5 Tourist Experience and Behavior Intention

Tourist experience are divided into self-directed and other-directed tourist experiences. Different experiences will lead to different feelings which will prompt tourists to behave differently. Based on previous models and theoretical frameworks, the author puts forward the following hypotheses according to the influence of different dimensions of tourist experience on behavior intention:

- H3a: self-directed tourist experience has a positive effect on behavior intention;
- H3b: other-directed tourist experience has a positive effect on behavior intention.

To sum up, the research constructs a model of tourist experience, perceived value and behavior intention. As shown in Figure 2, start from the two dimensions of tourist experience, then divide

perceived value into three dimensions: knowledge value, experience value and sentimental value, finally discuss the relationship among tourist experience, perceived value and behavior intention .

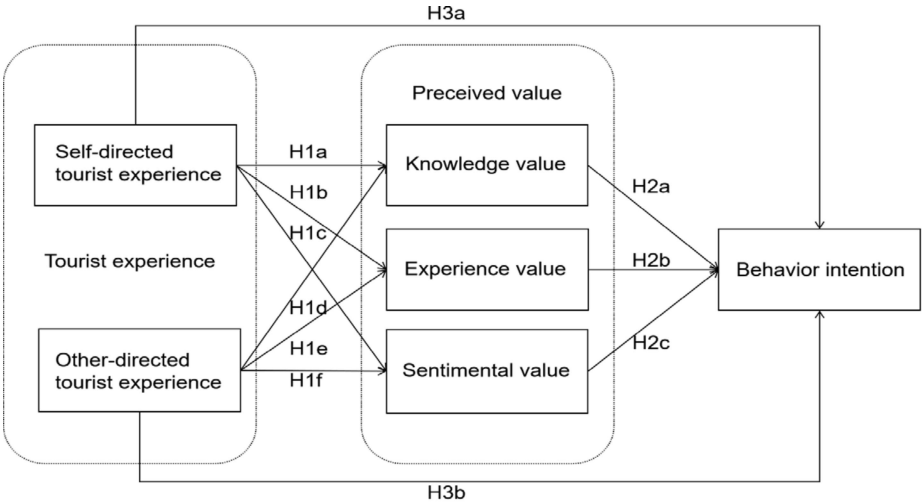


Figure 2 The Conceptual Model

3. Materials and Methods

3.1 Research Setting:Quanzhou County in Guilin

The memorial hall in a memorial park dedicated to the Battle of the Xiangjiang River during the Long March covers a total area of 7,479 square meters and consists of three floors. The memorial hall is the only thematic memorial hall that comprehensively displays the full picture of the Long March. In the hall, there are not only precious red cultural relics, documents, pictures and large-scale sculpture, but also modern digital technologies, such as scene simulation, multimedia equipment and XR panorama exhibition hall, which are explained by specially assigned personnel.

On April 25, 2021, Xi Jinping, general secretary of the Central Committee of the Communist Party of China, visited the the memorial hall and pointed out Guangxi is rich in red resources and these red resources should be fully utilized so that we can learn from history and increase faith. It represents that xiangjiang red culture resource have a high endowment and development value and also shows that the memorial hall is typical and representative in red tourism destinations.

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Figure 3 The internal structure of Panorama hall

3.2 Scale Design

At present, experts have not reached consensus on the items of tourist experience. Therefore, based on the existing study, tourist experience was divided into self-directed tourist experience and other-directed tourist experience according to the perspective of the tourist subject. The items of perceived value has formed a relatively mature system, so the items used on perceived value were derived from Sheth, Sweeney, Soutar and Paul Williams. The behavior intention scale was mainly measured by two basic variables: recommendation intention and revisit intention, and the items were mainly from scales of Duman, Jeonghwa Pan and Li Jin. According to the existing research and the characteristics of red tourism, we design the scale design which includes two dimensions of tourist experience, three dimensions of perceived value and two dimensions of behavior intention.

3.3 Data Collection

The field study was performed from January 7 to January 9 in 2022. We conducted the sample survey in the tourist destination by means of questionnaire. A total of 200 questionnaires were collected and non-standardized questionnaires were deleted later. Finally 194 valid questionnaires remained for analysis, with a valid rate of 97%.

4. Results

4.1 Sample Characteristics and Descriptive Analyses

After sorting out and analyzing the valid questionnaires, we conducted descriptive statistical analysis of the demographic and sociological characteristics of the survey sample (see Table 1). Among the 194 valid samples, the total number of male (50.52%) and female (49.48%) is very close, basically maintaining a balanced level. The age distribution is dominated by young and middle-aged people who are in the age between 18 and 59 years (60.09%), and the group who are in the

age between 18 and 35 years (25.77%) has the largest number. The masses (45.36%) account for the largest proportion, followed by League members (33.51%). In general, the sample basically covers all kinds of tourist groups, and its distribution is relatively uniform. The statistical data accords with the characteristics of demographic structure and is representative to a certain extent.

Table 1 Demographics

Characteristic	items	Percent	Characteristic	items	Percent
Gender	Male	50.52	Income	Below 3000	23.2
	Female	49.48		Between 3000-5000	29.38
Age	18 and below	17.01		Between 5000-8000	32.47
	Between 18-35 years	25.77		Above 8000	14.95
	Between 36-49 years	23.71	Political status	Masses	45.36
	Between 50-59 years	19.59		League Member	33.51
	60 and above	13.92		Communist party	21.13
Education background	Junior high school and below	8.25	Region	Guangxi	71.65
	High school	26.29		Other places	21.13
	College	22.16	Duration of visit	Below 1hour	18.04
	Bachelor	32.47		Between 1-2 hours	37.63
	Master degree and above	10.81		Between 2-3 hours	26.8
Occupation	Student	30.93		Above 3 hours	17.53
	Full-time job	41.24	Understanding level	I have no idea about it	23.2
	Part-time job	8.24		I don't know much	28.87
	Self-employment	14.43		I know it quite well	32.47
	Retirement	5.15		I know it	15.46
	Unemployment	0			

4.2 Reliability and Validity Analysis

SPSS23.0 and Amos23.0 analysis software are used to test the reliability and validity of the measurement model. Reliability analysis is an effective method to measure the stability and consistency of a scale. Since Likert five-point scale was used in the questionnaire survey, SPSS23.0 software was selected to calculate Cronbach's α coefficient of each latent variable to test the internal consistency of the scale. As shown in Table 2, Cronbach's α coefficients of all observed variables are all greater than 0.7, and most variables are greater than 0.9, so the overall reliability is very good.

Table 2 Factor loadings, Cronbach's α , CR and AVE

Latent variable	Observed variable	loadings	Cronbach's α	CR	AVE
Self-directed tourist experience	A1	.828	.924	0.93	0.68
	A2	.803			
	A3	.841			
	A4	.841			
	A5	.823			
	A6	.838			
	A7	.834			
Other-directed tourist experience	B1	.836	.934	0.95	0.72
	B2	.862			
	B3	.854			
	B4	.850			
	B5	.846			
	B6	.826			
	B7	.845			
Knowledge value	C1	.865	.887	0.92	0.75
	C2	.862			
	C3	.849			
	C4	.881			
Experience value	D1	.885	.900	0.93	0.77
	D2	.872			
	D3	.870			
	D4	.882			
Sentimental value	E1	.835	.892	0.93	0.76
	E2	.889			
	E3	.873			
	E4	.881			
Behavior intention	F1	.854	.926	0.94	0.73
	F2	.853			
	F3	.855			
	F4	.882			
	F5	.820			
	F6	.863			

Before analyzing the validity of the data, we should use the method of factor analysis first and judge whether the conditions of factor analysis meet the requirements. KMO value and Bartlett's Test of Sphericity are often used to judge whether the conditions of factor analysis are up to standard in structural equation models. According to the final results in Table 3, the observed value of the KMO statistic is very close to 1, and the observed value of the Bartlett's Test of Sphericity is large, and the P-value is under a certain significant level, indicating that the conditions of factor analysis are up to standard, and the original variable is very suitable for factor analysis.

Table 3 KMO and Bartlett's test

Indexes	Specific indexes	value
	KMO	.984
	Approx. Chic-Square	5984.951
Bartlett's Test of Sphericity	df	496
	Sig.	.000

Validity analysis is to judge whether the measuring tool can accurately measure the characteristics of variable, mainly including convergence validity and construct validity. After the factor rotation, the aggregation validity of the model can be judged by the factor loading (see Table 2). It can be seen from Table 2 that the factor loading of each observation variable is between 0.826 and 0.889 ($P < 0.001$), indicating that the measurement model has good aggregation validity.

After using Amos23.0 to establish factor analysis model, the convergent validity can be tested through the specific fit indexes, which includes χ^2 , χ^2/df , GFI, AGFI, RMSEA, NNFI, IFI and CFI. After comparing with the recommended value, the value of other fit indexes falls within the recommended value range except the GFI which is very close to the recommended value of 0.9. It can be seen that the theoretical model is acceptable, and the convergence validity is good.

Table 4 Fitness indexes of structural equation model

Fit indexes	recommended value	Fitted value
χ^2	The smaller the better	471.898
χ^2 / df	>3.0	1.039
GFI	>0.9	.877
AGFI	>0.8	.857
RMSEA	<0.08	.014
NNFI	>0.9	.926
IFI	>0.9	.997
CFI	>0.9	.997

4.3 Path Analysis

As presented in Table 5, the results of the structural model show that self-directed tourist experience is a significant determinant of knowledge value ($\beta=0.644$; $p<0.001$) and sentimental value ($\beta=0.368$; $p<0.001$), providing support to H1a and H1b. However, the direct effect of self-directed tourist experience on experience value was not supported ($\beta=-0.357$; $p<0.001$) which leads to the rejection of H1c. The results of the structural model show that other-directed tourist experience is a significant determinant of knowledge value ($\beta=0.339$; $p<0.001$) and experience value ($\beta=0.400$; $p<0.001$), providing support to H1d and H1f. However, the direct effect of other-directed tourist experience on sentimental value was not supported ($\beta=-0.950$; $p<0.001$) which leads to the rejection of H1e. Whether tour guide service or XR panoramic exhibition hall, all can improve tourists' knowledge, but the emphasis is different. The XR panoramic exhibition hall is more inclined to improve feelings. The guides uses their explanations to narrow the distance between tourists and the red culture, so the tour guide service is more conducive to emotional resonance. The results of the structural model show that sentimental value ($\beta=0.071$; $p<0.001$), self-directed tourist experience ($\beta=0.810$; $p<0.001$) and other-directed tourist experience ($\beta=0.347$; $p<0.001$) is a significant determinant of behavior intention, providing support to H2b, H3a and H3b. However, the direct effect of knowledge value ($\beta=-0.910$; $p<0.001$) and experience value ($\beta=-0.202$; $p<0.001$) on behavior intention was not supported which leads to the rejection of H2a and H2c. Tourists will be more impressed by new technologies they have never been exposed to before. So XR technology is also one of the featured projects of the memorial hall in a memorial park dedicated to the Battle of the Xiangjiang River during the Long March, which is different from other red tourist attractions. In general, as is shown in Figure 3, seven hypotheses have been verified: H1a, H1b, H1d, H1f, H2b, H3a and H3b. However, four hypotheses have been rejected: H3c, H3e, H2a and H2c.

Table 5 The results of Hypotheses

Hypothesis	Path	Coefficient	Support
H1a	STE→KV	0.644***	Yes
H1b	STE→SV	0.368***	Yes
H1c	STE→EV	-0.357***	No
H1d	OTE→KV	0.339***	Yes
H1e	OTE→SV	-0.95***	No
H1f	OTE→EV	0.400***	Yes
H2a	KV→BI	-0.910***	No
H2b	SV→BI	0.071***	Yes
H2c	EV→BI	-0.202***	No
H3a	STE→BI	0.810***	Yes
H3b	OTE→BI	0.347***	Yes

Note:STE= self-directed tourist experience;OTE= other-directed tourist experience;KV= knowledge value;

SV= sentimental value;EV= experience value;BI= behavior intention;*** $p < .001$

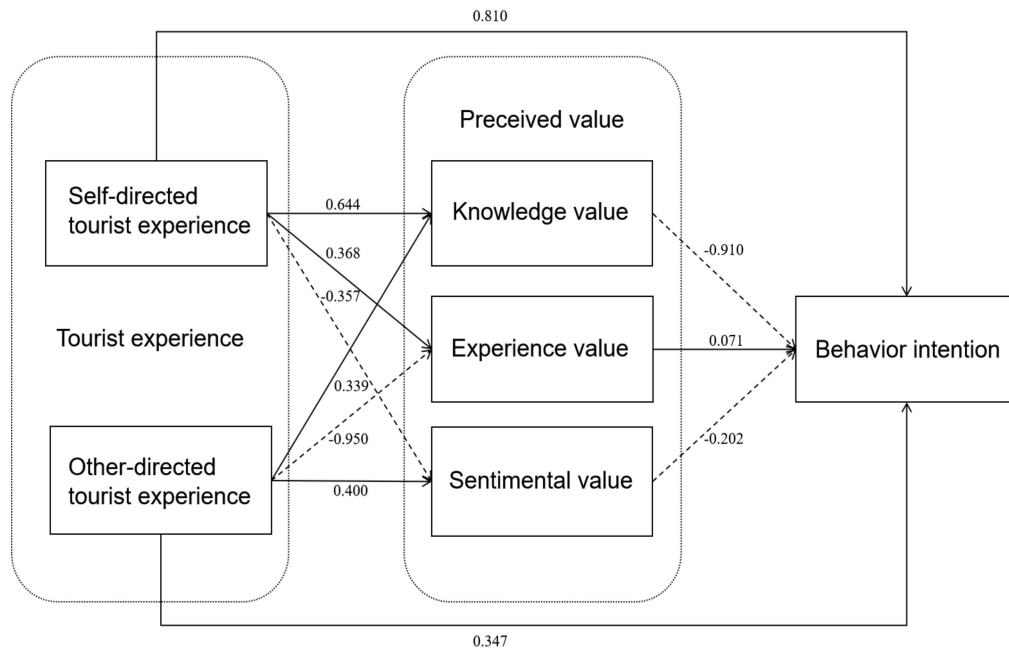


Figure 4 The path of tourist experience, perceived value and behavior intention

5. Implications and Future Research

5.1 Implications

As young generation becoming the main force of red tourists, red tourist attractions which provide engaging experience and attractive theme are more and more popular. Experience projects could includes red dancing&singing performance, immersion program with XR technology and so on. These projects help tourists have a opportunity to dialogue with revolutionary martyrs. The red tourist attractions popularizes red knowledge for tourists through diversified ways of experience project, so as to improve their intention to revisit and recommend. With the continuous development of emerging technologies, the red tourist attractions can combine red culture with digital technologies to increase tourism projects, and create a more immersive tourist experience for tourist. However, In the process of using technology, the cultural characteristics in red tourist attractions should not be stripped of and the authenticity in red tourist couldn't be lost.

To maintain sustainable development, a series of product that can deliver value should be made. Based on tourist experience, the manager can create a combination of products by different dimensions and comprehensively improve tourists' perceived value of red tourism attractions. It is also necessary to carry out centralized and differential marketing strategy for specific groups, improve the quality of on-site experience and service, continuously strengthen these values obtained by tourists

and promote their influence on tourists' behavior intentions.

5.2 Limitations and Future Research

Although the memorial hall in a memorial park dedicated to the Battle of the Xiangjiang River during the Long March is a typical red tourist attraction in China, there are many other types of red tourist attractions, such as red sites and former residence of martyr. Whether the research conclusion is applicable to other types of red tourist attractions needs further investigation. Future research should increase the number of cases fields to improve the accuracy and representation of the research results.

The scale of tourist experience used in this study is not mature. Based on the relevant scale, we modified the main questions. However, whether such modifications are scientific and reliable is hard to measure. At the same time, specific items in this study are more inclined to two ways of experience, namely XR panoramic exhibition hall and tour guide service. There is a lack of research on other concrete forms of tourism interpretation system. Future studies need to optimize the scale and continuously expand the sample size for verification.

This study only tested the relationship between tourist experience, perceived value and behavior intention. In future research, possible influence factors or relevant factors such as mediating variable can be included in the framework. This study didn't compare different groups of respondents as well. In the future, we will do comparative analysis and further verification to improve the research framework system.

For a long time, Guilin has been not only a red resource intensive area, but also the ethnic enclaves. In the future research, we can combine the red resources with the local ethnic characteristics to make Guilin's red tourism industry more regional.

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References

- [1] Arnold, D. M., Loeliger, H. A., & Vontobel, P. O. (2006). Simulation-Based Computation of Information Rates for Channels With Memory. *IEEE Transactions on Information Theory*, 52(8), 3498–3508.
- [2] Sutherland, I. E. (1968). A head-mounted three dimensional display. *Publication History*, 09, 757–764.
- [3] Wei, W. Y., & Yin, F. (2021). VR help develop red tourism resources. *Enterprise Economy*, 07, 146–151.
- [4] Afsarmanesh, H. , & Camarinha-Matos, L. M. (2000). Future Smart-Organizations: A Virtual Tourism Enterprise. *International Conference on Web Information Systems Engineering (Vol.1, pp.456-461)*. IEEE Computer Society.
- [5] Paquet, E., & Viktor, H. L. (2005). Long-term preservation of 3-d cultural heritage data related to architectural sites. *Proceedings of The 3D Virtual Reconstruction and Visualization of Complex Architectures*, 04, 12–13.
- [6] Li J.T., & Liu G.X. (1994). Virtual reality technology and its application. *Computer Engineering*, S1, 431–435.
- [7] Su, H. W., Li, J. N., & Xu, X. (2015). Virtual scenic area information system based on augmented reality technology. *Journal of Huaqiao University*, 04, 432–436.
- [8] Zuo, B. (2014). Red tourism and party identity: an empirical study based on Jinggangshan Scenic Spot. *Tourism Tribune*, 09, 60–72.
- [9] Muphy, P. E., & Carmichael, B. A. (1991). Assessing the tourism benefits of an open access sports tournament: The 1989 B. C. winter games. *Journal of Travel Research*, 03, 32–36.
- [10] Lee, T., & Crompton, J. (1992). Measuring novelty seeking in tourism. *Annals of Tourism Research*, 19, 732–751.
- [11] Wang, C. X., Wen, B. Y., & Jiang, C. F. (2001). Service quality, consumption value, customer satisfaction and behavior intention. *Nankai Business Review*, 06, 11–15.